

09/910,574

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Eugene Gorbatov et al.

Application No.: 09/910,574

Docket No.: P12150

Filed: 7/20/2001

For: Method and Apparatus for Enhancing
Television Programs with Event
Notifications

Examiner: Harum M. Yiman

Art Unit: 2611

AFFIDAVIT UNDER 37 C.F.R. 1.131

STATE OF OREGON
WASHINGTON COUNTY

We, Eugene Gorbatov and Juan Rivero, first being duly sworn, do hereby
state that:

1. We are co-inventors of the above-referenced patent application.
2. We are engineers for Intel Corporation, the assignee of the above-referenced patent application. In 2000 and 2001, we worked on Intel Corporation's interactive and enhanced digital broadcast television research efforts, in which substantial portions of the present invention are embodied.

3. Prior to March 2, 2001, we invented the concept of using ATVEF triggers for notifying users of program events occurring on other channels.
4. Attached are true copies of the first draft and submitted draft invention disclosures for this invention. These invention disclosures document the invention. The first draft of the invention disclosure was prepared on February 8, 2001. A subsequent draft was written on April 17, 2001.
5. The invention disclosure was submitted to the Intel legal department for processing according to Intel's normal business practices. It was received by the patent database group of the Intel Legal Team on April 23, 2001. The invention disclosure was reviewed by Intel's Software Intellectual Property Committee and approved for preparation of a patent application on May 29, 2001.
6. During the period from the date of invention as documented by the first draft of the invention disclosure, the date of which is prior to March 2, 2001, to the filing date of July 20, 2001, the invention disclosure was diligently processed by us and other employees of Intel according to the normal business practices of Intel Corporation.
7. On June 5, 2001, I met with an Intel patent attorney, Steven Skabrat, to discuss our invention. Subsequent to this time, I diligently worked with Steven Skabrat in providing information about the invention and in reviewing drafts of the patent application.

8. The patent application for our invention was filed on July 20, 2001, thereby establishing a date of constructive reduction to practice.

Respectfully submitted,

Dated: 08/09/2005

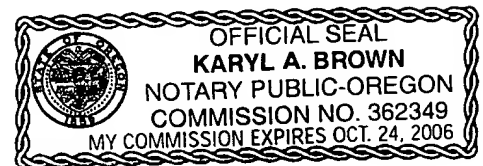
E. Gorbatov
Eugene Gorbatov

Dated: 08/09/2005
SSR

Juan Rivero
Juan Rivero

Sworn to and subscribed before me this 9th day of September, 2005.

Karyl A. Brown
Notary Public
My commission expires : 10/24/06



Instantaneous ATVEF Program Notification Mechanism

February 8, 2001

Abstract

The availability of multiple TV channels makes it desirable for users to have some sort of simultaneous access to multiple channels of interest. We propose a mechanism with which the user, while watching a TV program on one channel, can be instantaneously notified of an event of interest happening on a different channel. We use Advanced TV Enhancement Forum (ATVEF) protocol for viewer notifications.

Invention Disclosure: Statement

The availability of multiple TV channels makes it desirable for users to have some sort of simultaneous access to multiple programs of interest. Frequently the user watches a TV show on one channel while constantly checking other channels for interesting events. For example, while watching a film, the viewer might go back and check the score of a football game on a different channel.

We believe the TV experience will be enhanced if the viewers are notified about interesting events happening on other channels. This will allow viewers to follow the primary program without interruptions while alerting them about events of interest on other channels. The definition of an event of interest is program dependent. In the example of a football game a score change or touch down can represent such an event.

We use ATVEF [1] protocol for event notifications. ATVEF allows data enhancements to be integrated with the TV program and transmitted over the broadcast network to large viewer audiences. ATVEF specification defines three mechanisms: announcements, triggers, and packages. Announcements are used to announce new enhanced programs. Packages are used to transmit content resources that implement program enhancements. Finally, triggers are used to display the enhancements.

We define two types of channel notifications. First, notifications can be used to alert viewers to switch to a different channel right before an occurrence of an event of interest on that channel. An example of such event is the start of a new program or the end of the commercial block. In this case the viewer can just switch to the notification channel. Second, notifications can be used to alert viewers about interesting program fragments happening on other channels. A score in a football game or a weather report during the news are two examples of such events. Since there will be a delay between the time when such events occur and when notifications are received, these program fragments should be recorded. Program event alerts will serve a purpose of presenting the user a choice to view these fragments of interest.

There are two ways in which program fragment can be recorded. One possibility is to record the program fragment at the receiver and another is to record the fragment at the broadcaster and transmit it as a data enhancement.

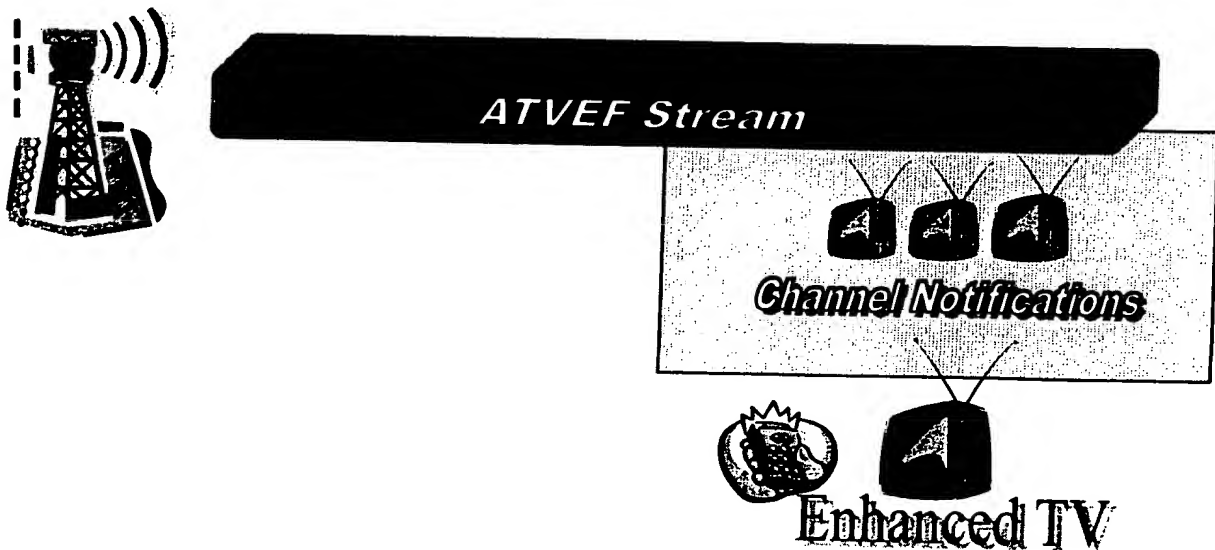
First alternative requires a recording capability at the user's TV set. There are several products today that provide such a capability [2]. However, this technology is still in its infancy and is available only at few households. Further, the number of channels you can record from is limited by the number of TV tuners - if you want to record on multiple channels you will need to have that many tuners. This approach is expensive and available only with the few TV sets today.

Representing program fragments as data enhancements is more scalable and cost effective. Broadcast operators can monitor multiple channels for interesting live events, record them, and then transmit them near real-time to audiences as enhancements. Viewers can view these fragments without switching to a different channel.

We implement both types of viewer notifications as ATVEF triggers (Figure 1). Triggers alert viewers of events of interest happening on different channels. They can either alert viewers to switch to a different channel or they can contain program fragments. In the first case triggers are simple enhancements that are used to announce an event on a different channel. They require few resources to implement the visual interface for program notification.

In the second case, in addition to program notification, triggers require resources that contain prerecorded program fragments. Triggers will display an alert notifying the viewer about an event of interest that just occurred on another channel and will present the user with a choice to load and view the video clip.

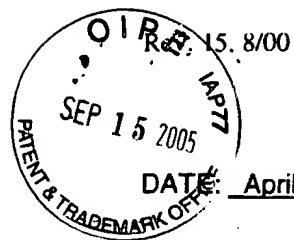
We have implemented ATVEF Content Editor (ACE), a tool that can be used to create ATVEF presentations. ACE provides an intuitive environment that can be used to experiment with our proposed mechanism and preview programs enhanced with channel notifications.



References

[1] <http://www.atvef.com>

[2] <http://www.tivo.com>



P12150

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INTEL INVENTION DISCLOSURE

ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

located at <http://legal.intel.com>

APR 19 2001

DATE: April 17, 2001

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It is important to provide accurate and detailed information on this form. The information will be used to evaluate your invention for possible filing as a patent application. When completed and signed, please return this form to the Legal Department at JF3-147. You can submit electronically via e-mail to "invention disclosure submission" if all of the information is electronic, including drawings and supervisor approval. If you have any questions, please call 264-0444.

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(PROVIDE SAME INFORMATION AS ABOVE FOR EACH ADDITIONAL INVENTOR)

2. Title of Invention: Method and Apparatus for Enhancing TV Programs with Event Notifications
3. What technology/product/process (code name) does it relate to (be specific if you can):
Enhanced TV, ATVEF
4. Include several key words to describe the technology area of the invention in addition to # 3 above: Enhanced TV, ATVEF, program event notifications
5. Stage of development (i.e. % complete, simulations done, test chips if any, etc.): Simulations Done
6. (a) Has a description of your invention been, or will it shortly be, published outside Intel:
NO: X YES: _____ If YES, was the manuscript submitted for pre-publication approval? _____
IDENTIFY THE PUBLICATION AND THE DATE PUBLISHED: APR 23 2001
- (b) Has your invention been used/sold or planned to be used/sold by Intel or others?
NO: X YES: _____ DATE WAS OR WILL BE SOLD: _____

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Method and Apparatus for Enhancing TV Programs with Event Notifications

General Purpose of Invention

The purpose of this invention is to enhance the capability of Enhanced TV programming such that TV viewers watching a show on one channel are notified of interesting programming events happening on other channels.

Advantages of Invention Over What is Done Now

It is common for TV viewers to follow multiple programs on different channels simultaneously. For example a person might be watching a movie on one channel while constantly checking the score of a football game happening on another channel. Or a family watching national news on a cable channel might want to switch to a local channel when the weather report is broadcasted there. Currently, picture-in-picture technology allows viewers to follow two channels simultaneously. However, there is no mechanism for notifying viewers of interesting program events happening on multiple channels. Thus, the user constantly has to switch to different channels often unnecessarily interrupting the primary program he/she is currently watching.

This invention overcomes the problem of "surfing TV channels" by providing notifications that alert Enhanced TV viewers to other programming events happening on different channels. This enables the viewer to watch a primary program without interruption and be timely notified about interesting programming events on other channels. The viewer has an option of switching to another channel based on the information included with the event notification.

Essential Element(s) or Key to Your Invention

The essential elements of the invention are:

- **ATVEF Enhanced TV programs** – Enhanced TV allows to integrate TV programs with relevant data enhancements. ATVEF protocol is a standard that specifies how to deliver enhanced programming over variety of transports. This invention uses ATVEF protocol to create program event notifications and deliver them to any intelligent receiver. Specifically, event notifications are simple data enhancements that are implemented as ATVEF packages and triggers that are executed at the receivers.
- **Program Event Specification** – In order to alert viewers to interesting events such events must be identified. Content creators for the program will have to decide which program fragments constitute interesting events. Viewers subscribe to program notifications through an interface available at the receiver. We envision a dedicated channel on which all broadcasters advertise program events. When the viewer subscribes to some of these events, a receiver generates a filter that parses out notifications and alerts the viewer to only those ones for which the viewer has subscribed.
- **Transport** – In addition to identifying and generating event notifications, a broadcast channel must be available on which the notifications can be sent. There are several cases that have to be considered:
 - **Receivers with Two Tuners** – Some TV receivers today have two tuners. One tuner is used to receive a program that is currently being watched while another tuner can be used for value added service (such a picture-in-picture). Program event notifications can be considered as such service.
 - **Receivers with One Tuner and Internet Connection** – For receivers with one tuner and connection to the Internet, IP multicast channel can be used as a transport to deliver program event notifications.
 - **Receivers with One Tuner and No Internet Connection** – For receiver that have only one tuner and no Internet connection, event notifications will have to be sent on the same channel along with the primary TV show. This will require broadcasters to cooperate by providing bandwidth on their channels to other networks for event notifications. We envision that broadcast networks will have mutual agreements for such services.

Value of Invention to Intel (How Will it be Used)

Method and Apparatus for Enhancing TV Programs with Event Notifications

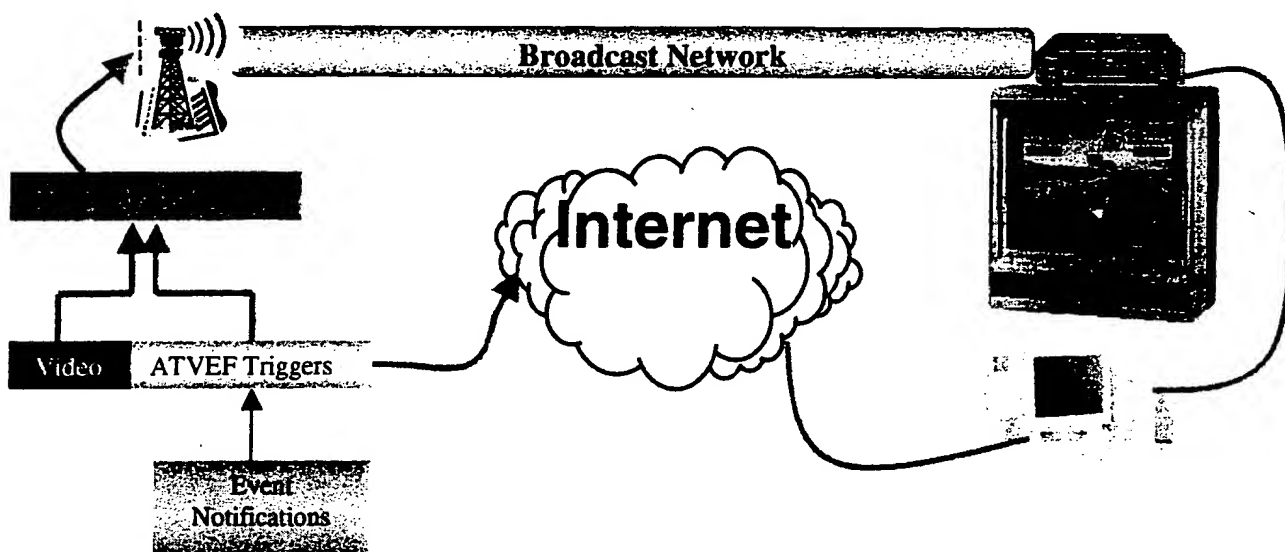
This invention will be used to add value to Enhanced TV programming by allowing viewers to follow program events on several channels while watching a primary channel without interruption. Enhanced TV is implemented in set top boxes and PCs running IA chips.

Closest or Most Pertinent Prior Art

This is reminiscent of a picture-in-picture technology that allows you to watch programs on two channels simultaneously. Unlike this technology, however, this invention requires the availability of Enhanced TV and allows to track multiple channels for interesting events while watching the primary program without interruption.

Likely Users/Infringers

Could be used/infringed upon by anyone having Enhanced TV available and desiring to follow multiple events on different channels.



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